SDMS US EPA REGION V -1

SOME IMAGES WITHIN THIS DOCUMENT MAY BE ILLEGIBLE DUE TO BAD SOURCE DOCUMENTS.

6/93 159981

522

ecology and environment, inc.

SITE SAFETY PLAN

Version 988

A. GENERAL INFORMATION

Project Title: Sauget Drums, Site Q Project No.: ZT305'

TDD/Pan No.: TOS-9502-010 / EIL 0860 AAA

Project Manager: ~~Steve Skove~~ Sam Sichau Project Dir.: ~~Thomas A. Kouris~~ Tom Sparg

Location(s): Sauget, St. Clair, Illinois

Prepared by: Sammy H. Sichau Date Prepared: 02/20/95

Approval by: [signature] Date Approved: 2/20/95

Site Safety Officer Review: _____ Date Reviewed: _____

Scope/Objective of Work: To stabilize uncovered drums at the site and to stage them up away from the Mississippi River Floodplain

Proposed Date of Field Activities: 02/20/95 - 03/15/95

Background Info: Complete: [X] Preliminary (No analytical data available) [ ]

Documentation/Summary:

Overall Chemical Hazard:	Serious [ ]	Moderate [X]
	Low [ ]	Unknown [ ]
Overall Physical Hazard	Serious [ ]	Moderate [X]
	Low [X]	Unknown [ ]

B. SITE/WASTE CHARACTERISTICS

Waste Type(s):

Liquid	[X]	Solid	[X]	Sludge	[X]	Gas/Vapor	[ ]

Characteristic(s):

Flammable/ Ignitable	[X]	Volatile	[X]	Corrosive	[ ]	Acutely Toxic	[ ]
Explosive	[ ]	Reactive	[ ]	Carcinogen	[X]	Radioactive*	[ ]

Other: _____

Physical Hazards:

Overhead	[ ]	Confined* Space	[ ]	Below Grade	[X]	Trip/Fall	[X]
Puncture	[X]	Burn	[ ]	Cut	[X]	Splash	[X]
Noise	[ ]	Heat/Cold Stress	[X]	Other:			

*Requires completion of additional form and special approval from the Corporate Health/Safety group. Contact RSC or HQ.

HS018A(04/02/91)

Site History/Description and Unusual Features (see Sampling Plan for detailed description): The location is a former Monsanto plant with several landfills. SEE NEXT PAGE FOR MORE INFORMATION.

Locations of Chemicals/Wastes: Buried waste in drums, soil and surface drainage run-off.

Estimated Volume of Chemicals/Wastes: Unknown Volume.

Site Currently in Operation Yes: [ ] No: [X]

C. HAZARD EVALUATION

List Physical Hazards by Task (i.e., drum sampling - explosion hazard, drilling - noise hazard, etc.) and number them. (Task numbers are cross-referenced in Section D)

Task/Physical Hazard Evaluation:
1. INITIAL SITE ENTRY / Trip-Fall, Puncture, Cold Stress
2. Soil Sampling - Trip/Fall, puncture, Cut, Splash.
3. Drum Sampling - Splash, Trip/Fall, Cut
4. photodocumentation - Trip/Fall, Cold Stress, Cut.
5. Air Monitoring - Trip/Fall, puncture, Cold Stress
6.
7.
8.

Chemical Hazard Evaluation:

Compound	PEL/TWA	Route of Exposure	Acute Symptoms	Odor Threshold	Odor Description
Benzene	1.0/10.0 ppm	IN, E, SK	IR, SK, H, V	4.68 ppm	Sweet Odor.
Methane	100 ppm/TWA	IN, E, SK	DZ, W, SB, DI, IR, H, V	N/A.	NO ODOR TO WEAK
PCB	10 ppm	IN, E, SK	IR	N/A	N/A.
Lead	PEL 0.5mg/m³	IH, E, SK, IN	Pois, AN, H, DS	NONE	N/A.
Pentachlorophenol	0.5mg/m³	IN, IH, E, SK	IR1, V, CP	NONE LISTED	Pungent-
See attached next page					

Note: Complete and attach a Hazard Evaluation Sheet for major known contaminants. Codes for C.H.E. below:

AB = ABDOMINAL PAIN	DA = DERMAL ABSORPTION	IH = INHALATION	A = OCULAR
AC = ACHES	DI = DIARRHEA	IN = INGESTION	SK = SKIN CONTACT
AN = ANEMIA	DS = DISTRESSED STOMACH	IR1= IRR OF E/M/THROAT	U = ULCERATION
BV = BLURRED VISION	DP = CNS DEPRESSION	IR = IRRITATION	V = VOMITING
C = COUGHING	DR = DROWSINESS	E = EYES	M = MOUTH
W = WEAKNESS	CD = CONTACT DERMATITIS	DZ = DIZZINESS	CP = CHEST PAIN
H = HEADACHES	LC = LOSS OF CONSCIOUSNESS	RT = RESPIRATORY TRACT	N = NAUSEA
SB = SHORTNESS OF BREATH	OTHER:		

Site Name: Saugat Areas 1 & 2

Job No.

TDD/PAF

CHEMICAL HAZARD EVALUATION (Continued)

possible

Compound	PEL/TWA	Route of Exposure	Acute Symptoms	Odor Threshold	Odor Descriptio
Arsenic	PEL 10 µg/m³ TLV 0.2 mg/m³	IH, E, IN	DS, V, W, IR1, IR N, DI, CAR	N/A	Odorless
Barium	PEL/ TLV 0.5 mg/m³	IH, E, SK, IN	IR, IR1, DS, V DI, AC, W	N/A	N/A
Cadmium	PEL 0.2 mg/m³ TLV 0.05 mg/m³	IH, E, SK, IN	IR, IR1, CP, SB W, N, V, D2, SD, DI	N/A	NONE
Chromium	PEL 1.0 mg/m³ TLV N/A	IH, E, SK, IN	CD, U of SK, NASH IR1	N/A	N/A
Chrom, Hex	PEL 0.5 mg/m³ TLV 0.05 mg/m³	IH, E, SK, IA	IR, CAR, IR1, CD, H, U, N, V	Variable	N/A
Ethyl Benzene	PEL 100 ppm TLV 100 ppm	IH, E, SK, IN	IR, IR1, D2, CP N, H, V, DP	140 ppm	Solvent smell
Nickel	PEL 1 mg/m³ TLV 1 mg/m³	IH, E, SK, IN	IR, IR1, N, V, H CD, CAR	NONE	NONE
Xylene	PEL 100 ppm TLV 100 ppm	IH, E, SK, IN	D2, H, C, N, V AB, IR	20 ppm	sweet, aromatic
Zinc	PEL 10 mg/m³ TLV 10 mg/m³	IH, E, SK, IN	IR, C, W, AC N, V	N/A	N/A

2. SITE BACKGROUND

2.1 SITE DESCRIPTION

The DCP area is located in and around the cities of Sauget (formerly Monsanto) and Cahokia in west-central St. Clair County, Illinois (see Figure 2-1). The project area consists of 12 suspected uncontrolled hazardous waste sites, and six segments of Dead Creek, which is an intermittent stream flowing southerly in the eastern portion of the project area. To avoid confusion stemming from various file designations or aliases for the various sites or creek sectors, each site or creek sector has been assigned an alphabetical designation (see Figure 2-2). The disposal sites occupy approximately 220 acres.

The scope of work revision submitted to IEPA in August 1986 included the concept of grouping several sites and creek sectors together for future Hazard Ranking System (HRS) scoring purposes. Sites were grouped into areas based on geographical relationship, same ownership or similar operation, and similar waste types and common exposure pathways. Sites grouped into areas included Sites G, H, I, L, and Creek Sectors A and B (Area 1), and Sites O, Q, and R (Area 2). These areas are presented in Figure 2-3. Sites J, K, M, N, and P do not meet requirements for site aggregation and will be referred to henceforth as peripheral sites.

The DCP sites consist of a number of former municipal and industrial waste landfills; surface impoundments or lagoons; surface disposal areas; past excavations thought to be filled or partially filled with unknown wastes; and an areal drainage flowpath (Dead Creek).

D. SITE SAFETY WORK PLAN

Site Control: Attach map, use back of this page, or sketch of site showing hot zone, contamination reduction, zone, etc.

	Y	N		Y	N
Perimeter identified?	[X]	[ ]	Site secured?	[X]	[ ]
Work Areas Designated?	[ ]	[X]	Zone(s) of Contamination Identified?	[ ]	[X] will be during initial entry.

Personnel Protection (TLD badges required for all field personnel):

Anticipated Level of Protection (Cross-reference task numbers to Section C):

	A	B	C	D
Task 1		X		
Task 2			X	
Task 3		X		
Task 4			X	
~~(Expand if necessary)~~ TASK 5			X	

Modifications:

Face shield & apron required for Task 3. ~~Use~~ Visqueen Drape To contain possible drum spray.

Action Levels for Evacuation of Work Zone Pending Reassessment of Conditions:

- Level D: O_2 <19.5% or >25%, explosive atmosphere >10% LEL, organic vapors above background levels, particulates > _____ mg/m^3, other ______________.
- Level C: O_2 <19.5% or >25%, explosive atmosphere >25% LEL (California-20%), unknown organic vapor (in breathing zone) >5 ppm, particulates > _____ mg/m^3, other __________.
- Level B: O_2 <19.5% or >25%, explosive atmosphere >25% LEL (California-20%), unknown organic vapors (in breathing zone) >500 ppm, particulates > _____ mg/m^3, other ____________.
- Level A: O_2 <19.5% or >25%, explosive atmosphere >25% LEL (California-20%), unknown organic vapors >500 ppm, particulates > _____ mg/m^3, other ________.

Air Monitoring (daily calibration unless otherwise noted):

Contaminant of Interest	Type of Sample (area, personal)	Monitoring Equipment	Frequency of Sampling
PCB/Lead (all inorganic)	Arial	Mini Ram	INITIAL/PERIODIC
Benzene/Methane/			
pentachlorophenol	"	OVA, LEL.	INITIAL/PERIODIC.
and all other Organic	vapors		continuous during Drum opening
Vapors Ionizing Rad	Area	Victoreen	Initial/continuous during Drum opening

(Expand if necessary)
Explosive Atmosphere — LEL — Initial/continuous during Drum opening

Decontamination Solutions and Procedures for Equipment, Sampling Gear, etc.:

All Sampling gear and washable personal PE will be decon'd using Alconox Solution. All Sampling equipment will decon'd before and after each Sampling event. Rinse with fresh H_2O will follow that. Then air dried.

HS018A(04/02/91)

Personnel Decon Protocol: Wet decon using Alconox solution followed by triple rinse with fresh water ~~for all unprotected organs, ie, hands~~

Decon Solution Monitoring Procedures, if Applicable: Decon Solution will be changed after each decontamination event.

Special Site Equipment, Facilities, or Procedures (Sanitary Facilities and Lighting Must Meet 29 CFR 1910.120): will be provided by the U.S. EPA's ERCS.

Site Entry Procedures and Special Considerations: Permission will be obtained prior to site entry. Stay upwind of contamination when possible. The buddy system will be maintained at all times. Arrangement for site entry will be done by OSC and ERCS. TAT will buddy w/OSC + ERCS

Work Limitations (time of day, weather conditions, etc.) and Heat/Cold Stress Requirements:

Work is restricted to daylight hours only and workers are to be monitored for heat/cold stress. When vermiculite is used to pack samples, dust masks will be worn. Acknowledged

General Spill Control, if applicable: Not anticipated.

Investigation-Derived Material Disposal (i.e., expendables, decon waste, cuttings):

Investigative-derived materials will be decontaminated in accordance with procedures listed above. The decontaminated material will be bagged and left on-site in appropriate waste containers with prior permission of site owner/operator

Sample Handling Procedures Including Protective Wear:

After samples have been collected, the outside of the sample bottles will be decontaminated by washing (not submerging) the bottles in an Alconox solution and rinsing in distilled water. The protective clothing level (i.e. suits, gloves, boots) worn during on-site job activities will be maintained while decontaminating the bottles. Respiratory protection will be worn based on professional judgement. Latex gloves, at a minimum, will be worn while handling the bottles after decontamination.

Team Member*	Responsibility
~~Steve Stare~~ TRS	Team Leader
Sammy Sinha	Site Safety Officer
Sam Borries	U.S. EPA OSC.

*All entries into exclusion zone require Buddy System use. All E & E field staff participate in medical monitoring program and have completed applicable training per 29 CFR 1910.120. Respiratory protection program meets requirements of 29 CFR 1910.134, and ANSI Z88.2 (1980).

MEDTOX HOTLINE

1. Twenty-four hour answering service: (501) 370-8263

   What to report:

   - State: "this is an emergency."
   - Your name, region, and site.
   - Telephone number to reach you.
   - Your location.
   - Name of person injured or exposed.
   - Nature of emergency.
   - Action taken.

2. A toxicologist, (Drs. Raymond Harbison or associate) will contact you. Repeat the information given to the answering service.

3. If a toxicologist does not return your call within 15 minutes, call the following persons in order until contact is made:

   a. 24 hour hotline - (716) 684-8940
   b. Corporate Safety Director - Paul Jeanmaire - home # (716) 555-1260
   c. Assistant Corp. Safety Officer - Steven Sherman - home # (716) 688-0084
   d. Chicago Health & Safety Manager - Deem Tiebout - home # (312) 338-4423

EMERGENCY ROUTES

(NOTE: Field Team must Know Route(s) Prior to Start of Work)

Directions to Hospital (include map) Follow service road to Hwy 3 (55) 5-25-94. Go north on Hwy 50 for 3-4 miles. Hwy 3 (55) 5-25-94 turns into 8th St in downtown E. St. Louis. Follow 8th St. up to Hwy 15 (Missouri Ave) intersection. St. Mary's Hospital 129 N. 8th St E. St. Louis IL

Emergency Egress Routes to Get Off-Site Follow service roads to Hwy 50. Regroup at this point.

HSO18A(04/02/91)

E. EMERGENCY INFORMATION

(Use supplemental sheets, if necessary)

LOCAL RESOURCES

(Obtain a local telephone book from your hotel, if possible)

Ambulance 911 - E. St. Louis

Hospital Emergency Room St. Marys Hospital 129 N. 8th St. (618) 274-1900

Poison Control Center (800) 852-2022

Police (include local, county sheriff, state) 911 - E. St. Louis

Fire Department 911 - E. St. Louis

Airport N/A

Agency Contact (EPA, State, Local USCG, etc.) U.S. EPA Sam Borries (312) 353-2886

Local Laboratory N/A

UPS/Fed. Express (800) 238-5355

Client/EPA Contact U.S. EPA Sam Borries / OSC

Site Contact Same

SITE RESOURCES

Site Emergency Evacuation Alarm Method 3 horn blasts on vehicle or verbal

Water Supply Source Bottled water

Telephone Location, Number Mobile Phone

Cellular Phone, if available Same as above

Radio 2-way radios (3)

Other N/A

EMERGENCY CONTACTS

1. Dr. Raymond Harbison (Univ. of Florida) ..... (501) 221-0465 or (904) 462-3277, 3281
   Alachua, Florida (501) 370-8263 (24 hours)

2. Ecology and Environment, Inc., Safety Director
   Paul Jonmaire ..... (716) 684-8060 (office)
   (716) 655-1260 (home)

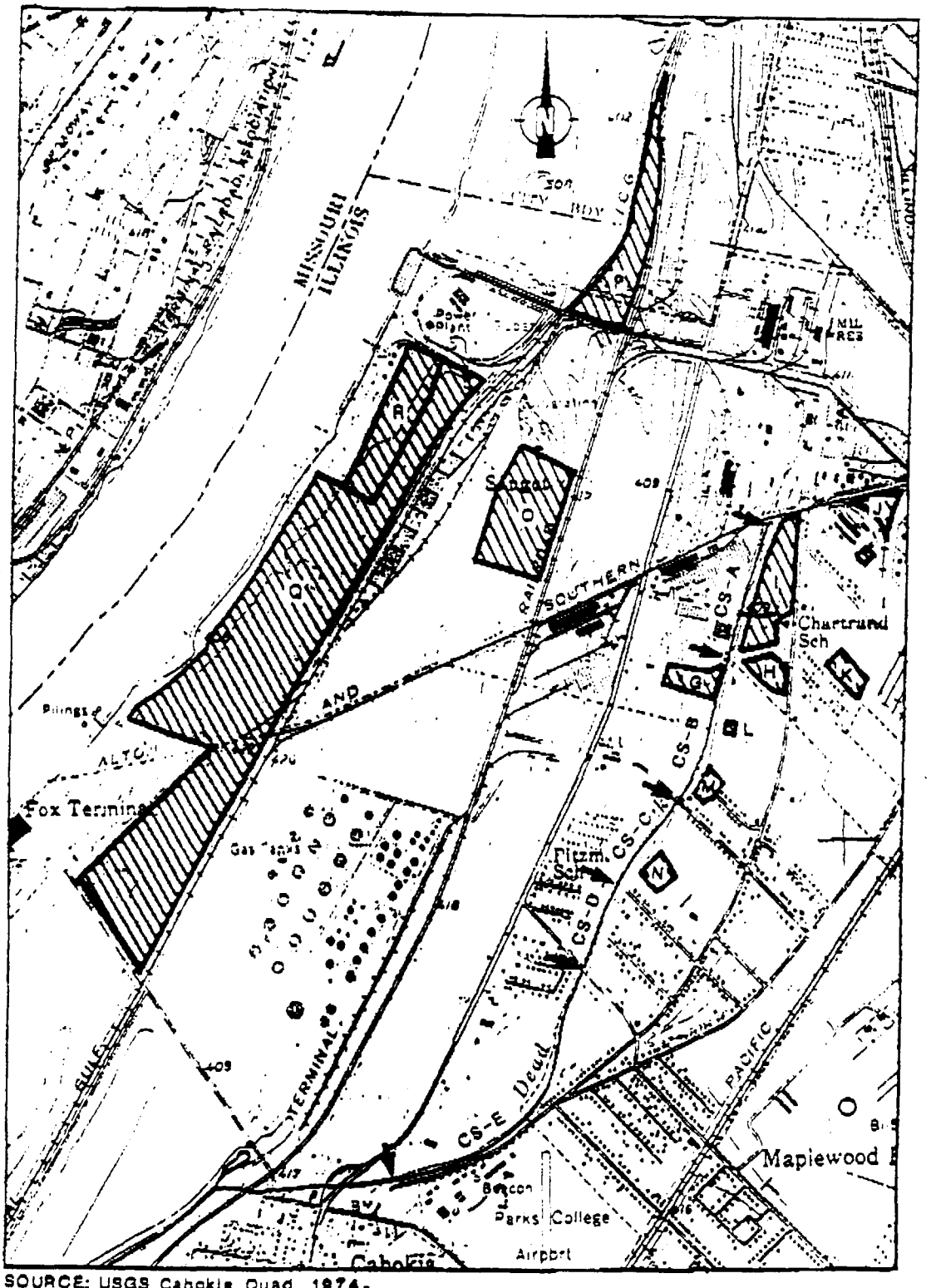
3. Dean Tiebout, Regional Safety Coordinator, Chicago ..... (312) 663-9415 (office)
   (312) 338-4423 (home)

4. Jerry Oskvarek, Office Manager, Chicago ..... (312) 775-7040 (home)

5. Tom Kouris, TAT Leader, Chicago ..... (312) 201-3790 (office)
   (219) 924-1341 (home)

6. Pat Zwilling, ATATL, Chicago ..... (708) 387-5934 (home)

7. Ron Bugg, TAT Safety Officer, Chicago..... (219) 922-8835 (home)



SOURCE: USGS Cahokia Quad, 1974.

FIGURE 2-2 SITE REPORTING DESIGNATIONS FOR THE DEAD CREEK PROJECT

MEDTOX HOTLINE

1. Twenty-four hour answering service: (501) 370-8263

   What to report:

   - State: "this is an emergency."
   - Your name, region, and site.
   - Telephone number to reach you.
   - Your location.
   - Name of person injured or exposed.
   - Nature of emergency.
   - Action taken.

2. A toxicologist, (Drs. Raymond Harbison or associate) will contact you. Repeat the information given to the answering service.

3. If a toxicologist does not return your call within 15 minutes, call the following persons in order until contact is made:

   a. 24 hour hotline - (716) 684-4940
   b. Corporate Safety Director - Paul Jenmaire - home # (716) 655-1260
   c. Assistant Corp. Safety Officer - Steven Sherman - home # (716) 688-0084
   d. Chicago Health & Safety Manager - Dean Tisbeut - home # (312) 338-4423

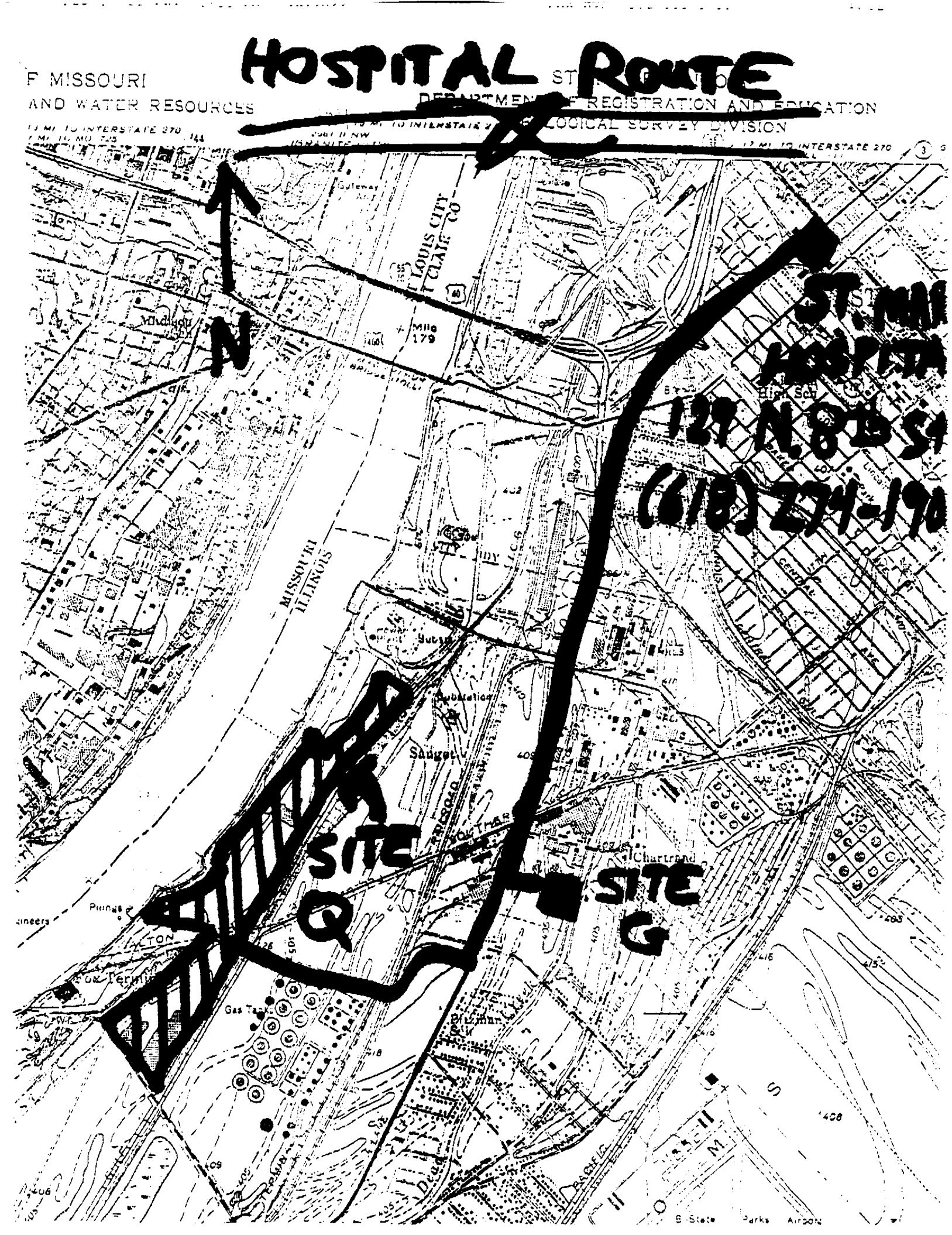
EMERGENCY ROUTES

(NOTE: Field Team must Know Route(s) Prior to Start of Work)

Directions to hospital (include map) Follow service road to Hwy ~~50~~ 3 SS 5-25-94. Go north on Hwy 50 for 3-4 miles. Hwy 3 ~~50~~ SS 5-25-94 turns into 8th St in downtown E. St. Louis. Follow 8th St. up to Hwy 15 (Missouri Ave) intersection. St. Marys Hospital 129 N. 8th St E. St. Louis IL

Emergency Egress Routes to Get Off-Site Follow service roads to Hwy 50. Regroup at this point.

HS018A(04/02/91)


HOSPITAL ROUTE
F MISSOURI
AND WATER RESOURCES
DEPARTMENT OF REGISTRATION AND EDUCATION
LOGICAL SURVEY DIVISION
ST. LOUIS CITY
ST. CLAIR CO
MISSOURI
ILLINOIS
SITE Q
SITE G
N
ST. MI
HOSPITA
121 N 8th St
(618) 274-170

Vehicle Safety Checklist
Ecology & Environment, Inc.
Chicago Office

Date: _____ Time: _____ Odometer: _____

Vehicle Model: _____ Color: _____ License Plate No. _____

INTERIOR:
____ All Safety Belts-Proper Locking
____ Parking Brake

START ENGINE:
____ Oil Pressure
____ Instrument Panel (Warning Lights or Buzzers)
____ Horn
____ Windshield Wiper & Washer
____ Heater/Defroster
____ Mirrors
____ Steering (Loose)
____ Interior Lights
____ Emergency Flashers
____ Starts Properly

FRONT:
____ Headlights (Dim/Bright)
____ Turn Signals
____ Emergency Flashers

REAR:
____ Tail Lights
____ Brake Lights
____ Back up Lights
____ Turn Signals
____ Emergency Flashers

MECHANICAL OPERATION:
____ Engine (misses, knocks, etc.)
____ Check Oil
____ Water/Anti-freeze
____ Viper Fluid
____ Brake Fluid

OUTSIDE:
____ Tires (properly inflated)
____ Gas Tank Cap

EMERGENCY EQUIPMENT:
____ Fire Extinguisher
____ First Aid Kit
____ Flags, Flares,
____ Spare tire (properly inflated)
____ Tire Changing Kit (jack, tools, etc.)

REMARKS:

TEAM MEMBER/OPERATOR: _____ / _____
(print name) signature

SITE NAME/ADDRESS: _____

PAN/JOB NUMBER: _____

RETURN OF VEHICLE TO DUTY STATION

Vehicle Cleanliness: _____

Remarks: _____

Corrections Necessary: _____

TEAM MEMBER/OPERATOR: _____ / _____
(print name) signature

Date: _____ Time: _____ Odometer:

SITE SAFETY MEETING
(Must be filled out by Site Safety Officer at the site)

Project _____ TDD: _____ PAM #:

Site Safety Officer : _____ Date _____ Time

Address:

Type of Work: _____

_____

SAFETY TOPICS PRESENTED

Protective Clothing/Equipment: _____

_____

Chemical Hazards: _____

_____

Physical Hazards: _____

_____

Radiation Hazards: _____

_____

Emergency Procedures: _____

_____

_____

Hospital/Clinic: _____ Telephone: _____

Hospital Address: _____ Emergency Telephone #: _____

Special Equipment: _____

Others: _____

Checklist

1. Emergency information reviewed? Y / N and made familiar to all team members? Y / N
2. Route to nearest hospital explained and reviewed? Y / N and its location known to all team members? Y / N
3. Site safety plan readily available and its location known to all team members? Y / N

The site safety meeting shall be attended by all personnel who will be working within the site area. Daily informational update meetings will be held when site tasks and conditions change.

ATTENDANCE

PRINT NAME	SIGNATURE	DATE

MEETING CONDUCTED BY:

Revised (4/3/92)

ECOLOGY AND ENVIRONMENT, INC. - CHICAGO

Site Name: _____ PAN/TDD#: _____/_____

Date: _____ Wind Direction: _____ Weather _____

EQUIPMENT	ID#	CALIB./OPER. CHECK	INITIALS & DATE	BACKGROUND READING	ON-SITE READING
OVA					
HNu					
Photovac Tube					
O2 Meter					
Exposimeter					
Combo-meter					
Rad-MINI					
Monitor-4					
Draeger tubes					
Monitox					
OTHERS:					

Attendees at Site: _____

_____

Protective Clothing Worn: _____

_____

Comments on Monitoring or Protective Clothing (ex: Was the monitoring equipment possibly effected by the weather?) _____

_____

_____

Team Leader _____ _____ _____

(Print Name) (Signature) (Date)

Site Safety Officer _____ _____ _____

(Print Name) (Signature) (Date)

Please submit the original to Ron Bugg and a copy to the project file

(Revised 4/3/92)

SITE DOSIMETER LOG

PROJECT/PAN # _____ SITE NAME _____

SITE SAFETY OFFICER _____ WEEK OF _____

NAME AND DOSIM. #	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY

To the nearest half-hour, record time spent downrange as "S" (e.g., S:2.5hrs), time spent in active PDS operation as "P", and any time spent downrange in rescue activity as "R".

HS005(2/24/89)

WASTE-DISPOSAL METHODS

The disposal methods outlined below are intended only as guides. We do not assume responsibility for their use. Careful consideration must be given to the chemical and physical properties of the substance. In addition, local laws and regulations may preclude the use of these methods which are primarily designed for small quantities. Observe all federal, state, and local laws.

The disposal of some chemicals may require deactivation or modification of the material by chemical means. Chemical waste-disposal reactions must be handled with the same care and consideration used with synthetic procedures. Appropriate consideration must be given to reaction conditions, *i.e.*, stoichiometry, order and rate of addition, heat of reaction, evolution of gaseous products, pH, efficiency of stirring, rate of reaction, atmospheric sensitivity, etc.

Chemical waste-disposal reactions should be carried out in a chemical fume hood and in appropriate laboratory glassware. Because these reactions are often vigorous, protective safety equipment such as safety goggles, respirator, gloves, face and/or safety shield and other protective equipment must be used.

Initial reactions in a disposal sequence should be carried out on a small scale (5-10g). The reactant concentrations should not exceed 10% of the reaction volume and the final reaction volume should not exceed 50% of the working capacity of the reaction vessel, regardless of the reaction scale. Larger quantities of the material should be handled in several small-size reactions. To ensure completion of reaction, the waste disposal procedure should be run for at least an additional 4 to 8 hours after all materials have been mixed.

All reactions should be run by technically qualified persons familiar with the potential hazards of the chemical reactions.

A Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

B The material should be ignited in the presence of sodium carbonate and slaked lime (calcium hydroxide). The substance should be mixed with vermiculite and then with the dry caustics, wrapped in paper and burned in a chemical incinerator equipped with an afterburner and scrubber.

C This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber.

D Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable.

E To a solution of the product in water, add an excess of dilute sulfuric acid. Let stand overnight. Remove any insolubles and bury in a landfill site approved for hazardous-waste disposal.

F Cautiously dissolve the material in water. Neutralize immediately with sodium carbonate or, if the material does not dissolve completely, add a little hydrochloric acid followed by sodium carbonate. Add calcium chloride in excess of the amount needed to precipitate the fluoride and/or carbonate. Separate the insolubles and bury in a landfill site approved for hazardous-waste disposal.

G Under an inert atmosphere, cautiously add the material to dry butanol in an appropriate solvent. The chemical reaction may be vigorous and/or exothermic. Provisions must be made for venting of large volumes of highly flammable hydrogen and/or hydrocarbon gases. Neutralize the solution with aqueous acid. Filter off any solid residues for disposal as hazardous waste. Burn the liquid portion in a chemical incinerator equipped with an afterburner and scrubber.

H Neutralize the solution and add filtering agent (10g per 100ml). Evaporate the liquid and bag the residual solid for burial in a landfill site approved for hazardous-waste disposal.

I Dissolve the solid in (or dilute the solution with) a large volume of water. Carefully add a dilute solution of acetic acid or acetone to the mixture in a well ventilated area. Provisions should be made to vent safely the hydrogen gas given off during the decomposition. Check acidity of the solution and adjust to pH 1 if necessary. Let stand overnight. Neutralize the solution (pH 7). Evaporate the solution and bury the residue in a landfill site approved for hazardous-waste disposal.

J Cautiously acidify a 3% solution or a suspension of the material to pH 2 with sulfuric acid. Gradually add a 50% excess of aqueous sodium bisulfite with stirring at room temperature. An increase in temperature indicates that a reaction is taking place. If no reaction is observed on the addition of 10% of the sodium bisulfite solution, initiate it by cautiously adding more acid. If manganese, chromium, or molybdenum is present, adjust the pH of the solution to 7 and treat with sulfide to precipitate for burial as hazardous waste. Destroy excess sulfide, neutralize and flush solution down the drain.

K Please contact the Technical Services Department. Be sure to mention name, catalog number and quantity of the material.

L The material should be dissolved in 1) water; 2) acid solution or 3) oxidized to a water-soluble state. Precipitate the material as the sulfide, adjusting the pH of the solution to 7 to complete precipitation. Filter the insolubles and dispose of them in a hazardous-waste site. Destroy any excess sulfide with sodium hypochlorite. Neutralize the solution before flushing down the drain.

M A slurry of the arenediazonium salt with water can be disposed of by adding it gradually to a stirred solution of 5-10% excess 2-naphthol in 3% aqueous sodium hydroxide at 0-20°C. After 12 hours, the resulting azo dye is filtered and either incinerated or buried in a landfill site approved for hazardous-waste disposal. Neutralize the remaining solution before disposal.

N For small quantities: cautiously add to a large stirred excess of water. Adust the pH to neutral, separate any insoluble solids or liquids and package them for hazardous-waste disposal. Flush the aqueous solution down the drain with plenty of water. The hydrolysis and neutralization reactions may generate heat and fumes which can be controlled by the rate of addition.

O Bury in a landfill site approved for the disposal of chemical and hazardous waste.

P Material in the elemental state should be recovered for reuse or recycling.

Q Cautiously make a 5% solution of the material in water or dilute acid. There may be a vigorous, exothermic reaction and fumes may be generated due to the hydrolysis of the material. Control any reaction by cooling and by the rate of addition of the material. Gradually add dilute ammonium hydroxide to pH 10. Filter off any precipitate for disposal in a chemical landfill. If there is no precipitation, gradually adjust the pH from 10 to 6, stopping when precipitation occurs.

R Catalysts and expensive metals should be recovered for reuse or recycling.

S Treat a dilute basic solution (pH 10-11) of the material with a 50% excess of commercial laundry bleach. Control the temperature by the addition rate of bleach and adjust pH if necessary. Let stand overnight. Cautiously adjust solution to pH 7. Vigorous evolution of gas may occur. Filter any solids for burial in a chemical landfill. Precipitate any heavy metals by addition of sulfide and isolate for burial. Additional equivalents of hypochlorite may be needed if the metal can be oxidized to a higher valence state. For metal carbonyls, the reaction should be carried out under nitrogen.

T Cautiously make a 5% solution of the product in water; vent because of possible vigorous evolution of flammable hydrogen gas. Acidify the solution to pH 1 by adding 1*M* sulfuric acid dropwise. Acidification will cause vigorous evolution of hydrogen gas. Allow the solution to stand overnight. Evaporate the solution to dryness and bury the residue in a landfill site approved for hazardous-waste disposal.

U Take the material (or a solution) and make a 5% solution in tetrahydrofuran. Cautiously add the solution dropwise to an ice-cooled, stirred basic solution of commercial bleach. Oxidation may release flammable hydrocarbon gases which must be vented. Let stand overnight. Adjust the pH to 7 and destroy excess hypochlorite with sodium bisulfite before disposal of the solution.

V Under an inert atmosphere cautiously add dry butanol or a mixture of dry butanol in an appropriate solvent, to a solution of the material in tetrahydrofuran. The chemical reaction may be vigorous and/or exothermic. Provisions must be made for the venting of a large volume of flammable hydrogen gas. When gas evolution ceases, cautiously add a basic hypochlorite solution dropwise to the reaction solution. Let stand overnight. Neutralize the solution and treat with sodium bisulfite to destroy any excess hypochlorite. Filter any solids for burial in a landfill site approved for hazardous-waste disposal.

THE SIGMA-ALDRICH LIBRARY OF CHEMICAL SAFETY DATA

Explanation of Codes

PROCEDURES FOR SPILLS OR LEAKS

1 Absorb on sand or vermiculite and place in closed container for disposal.
2 Cover with dry lime, sand, or soda ash. Place in covered containers using nonsparking tools and transport outdoors.
3 Shut off all sources of ignition.
4 Evacuate area.
5 Cover with an activated carbon adsorbent, take up and place in closed container. Transport outdoors.
6 Ventilate area and wash spill site after material pickup is complete.
7 Sweep up, place in a bag and hold for waste disposal.
8 Avoid raising dust.
9 Wear self-contained breathing apparatus, rubber boots and heavy rubber gloves.
10 Wear respirator, chemical safety goggles, rubber boots and heavy rubber gloves.
11 Cover with dry lime or soda ash, pick up, keep in a closed container and hold for waste disposal.
12 Carefully sweep up and remove.
13 Flush spill area with copious amounts of water.
14 Mix with solid sodium bicarbonate.
15 Place in appropriate container.
16 Wear protective equipment.
17 Wash spill site with soap solution.
18 Please contact the Technical Services Department. Be sure to mention the name and catalog number of the material.

FIRE-EXTINGUISHING MEDIA

1 Carbon dioxide.
2 Dry chemical powder.
3 Water spray.
4 Alcohol or polymer foam.
5 Class D fire-extinguishing material only.
6 Water may be effective for cooling, but may not effect extinguishment.
7 Carbon dioxide, dry chemical powder, alcohol or polymer foam.
8 Foam and water spray are effective but may cause frothing.
9 Do not use dry chemical powder extinguisher on this material.
10 Do not use carbon dioxide extinguisher on this material.
11 Noncombustible.
12 Do not use water.
13 Use extinguishing media appropriate to surrounding fire condition

Z14,666-0

Sigma-Aldrich Corporation, P.O. Box 355, Milwaukee, Wisconsin 53201 USA
(Sigma: 314-771-5765; Aldrich: 414-273-3850)

ecology and environment. inc.

JOB NO ZT2051 HAZARD EVALUATION OF CHEMICALS PREPARATION/UPDATE DATE 5-8-90

CHEMICAL NAME: BENZENE

CAS NUMBER: 71-43-2 DOT NAME/ID NO.: RQ:

SYNONYMS: BENZOL, BENZOLE, CYCLOHEXATRIENE, BENZOLENE, BICARBURET OF HYDROGEN, CARBON OIL, COAL NAPHTHA

CHEMICAL AND PHYSICAL PROPERTIES:

CHEMICAL FORMULA: C6H6 MOLECULAR WEIGHT: 78 PHYSICAL STATE: LIQUID SPG/D 0.879 SOLUBILITY (H20): SLIGHTLY

VAPOR PRESS: 75MM FREEZING POINT: 42 F BOILING POINT: 176 F FLASH POINT: 12 F FLAMMABLE LIMITS: 1.3-7.1%

ODOR CHARACTERISTICS: 4.68 PPM

INCOMPATABILIITIES: STRONG OXIDIZERS, CHLORINE, BROMINE

BIOLOGICAL PROPERTIES:

IDLH: TLV-TWA: 10 PPM PEL: 1 PPM ODOR THRESHOLD:

HUMAN (LCLO): TCLO 100/CNS RAT/MOUSE (LC50): TCLO 50/ AQUATIC:

CARCINOGEN: HUMAN-SUS TERATOGEN: MUTIGEN: EXPER

ROUTE OF EXPOSURE: [X] INHALATION [X] EYE CONTACT [X] SKIN CONTACT [X] INGESTION

HANDLING RECOMMENDATIONS (PERSONAL PROTECTIVE MEASURES):

10 PPM USE SCBA, USE PROTECTIVE CLOTHING, EXCEL-VITON;GOOD-NEOPRENE, SARANAX; POOR-BUTYL, NATURAL RUBBER FOR GLOVES, AVOID SKIN/EYE CONTACT

MONITORING RECOMMENDATIONS:

HEALTH HAZARDS: CAN CAUSE DIZZINESS, EUPHORIA, GIDDINESS, HEADACHE, NAUSEA, STAGGERING GAIT, WEAKNESS, DROWSINESS, RESPIRATORY IRRITATION, PULMONARY EDEMA AND PNEUMONIA, GASTROINTESTINAL IRRITATION, CONVULSIONS, AND PARALYSIS. CAN ALSO CAUSE IRRITATION TO SKIN, EYES

ACUTE SYMPTOMS: SKIN IRRITANT, CNS DEPRESSANT, MOSTLY IHL, INITIAL EXCITATION FOLLOWED BY HEADACHE, DIZZINESS, VOMITING, DELIRIUM, SEVERE EXPOSURE MAY SEE TREMORS, BLURRED VISION, SHALLOW RESP, CONVULSIONS

CHRONIC SYMPTOMS: ANOREXIA, DROWSINESS, ANEMIA, BLEEDING UNDER SKIN, REDUCED BLOOD CLOTTING;LIVER, KIDNEY, BONE MARROW DAMAGE, LEUKEMIA

FIRST AID

INHALATION: REMOVE TO FRESH AIR, GIVE ARTIFICAL RESPIRATION IF NEEDED, SEEK MEDICAL ATTENTION

EYE CONTACT: FLUSH/RINSE WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES

SKIN CONTACT: REMOVE CONTAMINATED CLOTHING; WASH WITH SOAP AND WATER

INGESTION: DO NOT INDUCE VOMITING, GIVE WATER OR MILK, GET MEDICAL ATTENTION IMMEDIATELY

DISPOSAL/WASTE TREATMENT:

TOXIC FUMES OF CARBON DIOXIDE, CARBON MONOXIDE

REFERENCES CONSULTED: [ ] VERSCHUERAN [ ] MERCK INDEX [X] HAZARDLINE [X] ACGIH [ ] TOXIC & HAZARDOUS SAFETY MANUAL [ ] CHRIS [ ] SAX
[X] NIOSH/OSHA POCKET GUIDE
[ ] OTHER: CHRIS (VOL III), SAX, ALDRICH, RTECS

Ecology and Environment, Inc.
Hazard Evaluation of Chemicals
Region V - Chicago

: / /

CHEMICAL NAME: Methane

I.D. : _____ Synonym: Marsh gas, Methyl Hydride
CAS No. : 74-82-8 Formula: CH4
DOT Class: FLAMMABLE GAS UN/NA #: UN 1971

CHEMICAL PROPERTIES

Phys St: Gas. Liq. Boil Pt: -258.68 °F Ionz Pot : 12.98 ev Fl Pt: -306.00°F
Mol Wt : 16.04 Melt Pt: -296.50 °F Vap Press: 1650.74000 mmHg LFL : 5.00%
Sp Gr : 0.42 Frz Pt : -296.50 °F Odr Thr : -- UFL : 15.00%
Stable : T Hazardous Polymerization will occur : F
Odor : ODORLESS
Incompat/React: forms explosive mixtures with air; inert to acids, alkalies
Solubility : alcohol, ether, organic solvents, slightly in water

TOXICOLOGICAL PROPERTIES

Exposure Limits: TLV-TWA (ACGIH): — PEL (OSHA): -- IDLH: —
STEL: -- STEL: —
Other Properties : SIMPLE ASPHYXIANT. No exposure limits established. NIOSH REL: 100 ppm/8hr
Tox Data: Inhalation: NE
Dermal : NE
Oral : NE
Carcinogen: NE
Mutagen : NE
Reproduct.: NE
Aquatic : NE
Other Tox.: NE
Routes of Exp.: Inhalation

PERSONAL PROTECTIVE MEASURES

Respirators : 1-100 PPM-NO RESPIRATOR AVAILABLE; 100-500 PPM-UPGRADE TO A SCBA; >500 PPM EVACUATE AREA
Cartridge Type : NO CARTRIDGE AVAILABLE
Protective Clothing: COVERALLS: TYVEK GLOVES: LATEX
Special Precautions: EXTREMELY FLAMMABLE. VAPOR EXPLOSION HAZARD INDOORS, OUTDOORS OR IN SEWERS. KEEP OUT OF LOW AREAS WITH METHANE READINGS

FIRST AID

Inhalation: move to fresh air, artf resp if nec, SEEK MEDICAL ATTENTION
Eye/Skin : flush w/water at least 15 min, SEEK MEDICAL ATTENTION
Ingestion : NA

SYMPTOMS

Acute : HEADACHE, DIZZINESS, DIFFICULTY BREATHING, NAUS/VOMTG, DEPRESSION, EXCITEMENT, CONVULSIONS, LOSS OF CONSCIOUSNESS. LIQUID WILL CAUSE FORSBITE
Chronic: NONE KNOWN

DISPOSAL, FIRE, SPILLS (see attached sheet)

Disposal: NE Fire: NE Leaks & Spills: NE
Decomposition Products: NE

REFERENCES CONSULTED

Index, ACGIH TLV Booklet
Other References: Hawleys (11th), CAMEO Resp Info, Poison Handbk, 1st Aid for Chem Accidents

Chemical Classification: SIMPLE ASPHYXIANT

Last Revision Date: 07/17/90

ecology and environment, inc.

JOB NO ZT2051 HAZARD EVALUATION OF CHEMICALS PREPARATION/UPDATE DATE 10/19/93

CHEMICAL NAME: PENTACHLOROPHENOL

CAS NUMBER: 87-86-5 DOT NAME/ID NO.: ENV HAZ SUB, SOLID, n.o.s. (PENTACHLOROPHENOL) UN3077 RQ: 10

SYNONYMS: PCP, DOWICIDE 7, PENCHLOROL

CHEMICAL AND PHYSICAL PROPERTIES:

CHEMICAL FORMULA: C6C15OH MOLECULAR WEIGHT: 266 PHYSICAL STATE: SOLID SPG/D 1.98 SOLUBILITY (H20): INSOLUBLE

VAPOR PRESS: 0002 MM FREEZING POINT: 370 F BOILING POINT: 590 FLASH POINT: NOT FLAM FLAMMABLE LIMITS: NOT FLAM

ODOR CHARACTERISTICS:

INCOMPATABILITIES: STRONG OXIDIZERS, BASES, ACID CHLORIDE & ANHYDRIDES

BIOLOGICAL PROPERTIES:

IDLH: TLV-TWA: 0.5 MG/M3 PEL: 0.5 MG/M3 ODOR THRESHOLD: N/A

HUMAN (LCLO): RAT/MOUSE (LC50): 11700 MG AQUATIC:

CARCINOGEN: PROBABLE HUMAN, CONF ANIMAL TERATOGEN: MUTIGEN: N/A

ROUTE OF EXPOSURE: [X] INHALATION [X] EYE CONTACT [X] SKIN CONTACT [X] INGESTION

HANDLING RECOMMENDATIONS (PERSONAL PROTECTIVE MEASURES):

APPROPRIATE CLOTHING TO PREVENT REPEATED OR PROLONGED SKIN CONTACT, WEAR EYE PROTECTION FACE SHIELDS, RESPIRATORS WITH ORGANIC VAPOR AND DUST (H) CARTRIDGES

MONITORING RECOMMENDATIONS:

PARTICULATE MONITORING: RAM/MINIRAM; HNU

HEALTH HAZARDS: CARDIOVASCULAR, AND RESPIRATORY SYSTEMS; EYES; LIVER; KIDNEYS; AND SKIN; CENTRAL NERVOUS SYSTEM

ACUTE SYMPTOMS: IRRITATION OF EYES & MUCOUS MEMBRANCES, SNEEZING, COUGHING, WEAKNESS, HIGH FEVER, ANOREXIA, SWEATING, DIZZINESS, NAUSEA, VOMITING, CHEST PAINS

CHRONIC SYMPTOMS: DERMATITIS, LIVER AND/OR KIDNEY DAMAGE, RISK OF SERIOUS INTOXICATION INCREASES WITH HOT WEATHER

FIRST AID

INHALATION: REMOVE TO FRESH AIR, GIVE ARTIFICAL RESPIRATION IF NEEDED, SEEK MEDICAL ATTENTION

EYE CONTACT: FLUSH/RINSE WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES

SKIN CONTACT: REMOVE CONTAMINATED CLOTHING; WASH WITH SOAP AND WATER

INGESTION: GIVE LARGE QUANTITIES OF WATER; INDUCE VOMITING; SEEK MEDICAL ATTENTION

DISPOSAL/WASTE TREATMENT:

RCRA F027; DISPOSAL PER 40 CFR 261 AND 40 CFR 268

REFERENCES CONSULTED: [ ] VERSCHUERAN [ ] MERCK INDEX [X] HAZARDLINE [X] ACGIH [ ] TOXIC & HAZARDOUS SAFETY MANUAL [X] CHRIS [X] SAX [X] NIOSH/OSHA POCKET GUIDE

[ ] OTHER: ALDRICH, SITTIG

ecology and environment, inc.

JOB NO ZT2051 HAZARD EVALUATION OF CHEMICALS PREPARATION/UPDATE DATE 5/8/90

CHEMICAL NAME: ARSENIC

CAS NUMBER: 7440-38-2 DOT NAME/ID NO.: ARSENIC, UN 1558 RQ:

SYNONYMS:

CHEMICAL AND PHYSICAL PROPERTIES:

CHEMICAL FORMULA: As MOLECULAR WEIGHT: 74.9 PHYSICAL STATE: BLACK SOLID SPG/D N/A SOLUBILITY (H20): INSOL

VAPOR PRESS: FREEZING POINT: N/A BOILING POINT: SUBLIM FLASH POINT: FLAMMABLE LIMITS: N/A

ODOR CHARACTERISTICS: ODORLESS

INCOMPATABILIITIES: HALOGENS, OXIDIZERS, ZINC, BROMINE, AZIDE, AIR

BIOLOGICAL PROPERTIES:

IDLH: 100 MG/M3 TLV-TWA: 0.2 MG/M3 PEL: 10 UG/M3 ODOR THRESHOLD:

HUMAN (LCLO): ORAL RAT/MOUSE (LC50): AQUATIC:

CARCINOGEN: YES TERATOGEN: MUTIGEN:

ROUTE OF EXPOSURE: [X] INHALATION [X] EYE CONTACT [ ] SKIN CONTACT [X] INGESTION

HANDLING RECOMMENDATIONS (PERSONAL PROTECTIVE MEASURES):

<100 UG/M3 USE APR; >UG/M3 USE SCBA; VITON, VINYL, NITRILE, NEOPRENE.

MONITORING RECOMMENDATIONS:

HEALTH HAZARDS: **SYSTEMIC POISON REQUIRING SPECIFIC ANTIDOTE**

ACUTE SYMPTOMS: ING-STOMACH DISTURBANCES, BURNING/DRY ORAL CAVATIES, VOMITING, SEVERE WEAKNESS, PERFORATION OF NASAL SEPTUM, IRRITATION OF RESPIRATORY TRACT, POSSIBLE SKIN IRRITATION

CHRONIC SYMPTOMS: IHL-INDUSTRIAL CHRONIC POISIONING, FATIGUE, WEAKNESS, LOSS OF APPETITE, NAUSEAU, DIARRHEA, HORSENESS, UPPER RESP MUCOSA IRRITATION, ADVANCED STAGES SEE NERVE PROBLEMS IN EXTREMITIES, LIVER DAMAGE, LUNG CANCER, SKIN CANCER.

FIRST AID

INHALATION: REMOVE TO FRESH AIR; GIVE ARTIFICIAL RESPIRATION IF NEEDED

EYE CONTACT: FLUSH/RINSE WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES

SKIN CONTACT: REMOVE CONTAMINATED CLOTHING; WASH WITH SOAP AND WATER

INGESTION: GET MEDICAL ATTENTION IMMEDIATELY

DISPOSAL/WASTE TREATMENT:

REFERENCES CONSULTED: [ ] VERSCHUERAN [ ] MERCK INDEX [ ] HAZARDLINE [X] ACGIH [ ] TOXIC & HAZARDOUS SAFETY MANUAL [ ] CHRIS [ ] SAX
[X] NIOSH/OSHA POCKET GUIDE
[ ] OTHER: SAX, ALDRICH

ecology and environment, inc.

JOB NO ZT2051 HAZARD EVALUATION OF CHEMICALS PREPARATION/UPDATE DATE 4-12-89

CHEMICAL NAME: BARIUM

CAS NUMBER: DOT NAME/ID NO.: 1400 RQ:

SYNONYMS: METALLIC BARIUM, BARIUM METAL

CHEMICAL AND PHYSICAL PROPERTIES:

CHEMICAL FORMULA: BA MOLECULAR WEIGHT: 137.36 PHYSICAL STATE: SOLID SPG/D 3.5 SOLUBILITY (H20): REACTS

VAPOR PRESS: 10MM FREEZING POINT: 1337 F BOILING POINT: FLASH POINT: FLAM SOLID FLAMMABLE LIMITS:

ODOR CHARACTERISTICS:

INCOMPATABILITIES: REACTS WITH WATER RELEASING TOXIC GASES. AMMONIA, OZ,HALOGENS,ACIDS METAL IN POWDERED FORM IS EXPLOSIVE

BIOLOGICAL PROPERTIES:

IDLH: 250 MG/M3 TLV-TWA: 0.5 MG/M3 PEL: 0.5 MG/M3 ODOR THRESHOLD:

HUMAN (LCLO): RAT/MOUSE (LC50): AQUATIC:

CARCINOGEN: TERATOGEN: MUTIGEN:

ROUTE OF EXPOSURE: [X] INHALATION [X] EYE CONTACT [X] SKIN CONTACT [X] INGESTION

HANDLING RECOMMENDATIONS (PERSONAL PROTECTIVE MEASURES):

PREVENT SKIN CONTACT, WEAR GLOVES, IMPERVIOUS CLOTHING

MONITORING RECOMMENDATIONS:

HEALTH HAZARDS: SOLUBLE BARIUM COMPOUNDS ARE PRIMARY SKIN IRRITANTS AND CONVULSANT POISONS. MAY CAUSE LOCAL IRRITATION OF EYES, NOSE, THROAT, BRONCHIAL TUBES AND SKIN. SOLUBLE BARIUM COMPOUNDS MAY ALSO CAUSE SEVERE STOMACH PAINS, SLOW PULSE RATE, IRREGULAR HEART BEAT,

ACUTE SYMPTOMS: TIGHTNESS OF NECK AND FACIAL MUSCLES, VOMITTING, DIARRHEA, PAIN, WEAKNESS, CARDIAC DISTURBANCES AND CONVULSIONS

CHRONIC SYMPTOMS: NO CHRONIC POISONING HAS BEEN REPORTED

FIRST AID

INHALATION: REMOVE TO FRESH AIR, GIVE ARTIFICAL RESPIRATION IF NEEDED, SEEK MEDICAL ATTENTION

EYE CONTACT: FLUSH/RINSE WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES

SKIN CONTACT: REMOVE CONTAMINATED CLOTHING; WASH IMMEDIATELY WITH SOAP AND WATER

INGESTION: GIVE LARGE QUANTITIES OF WATER; INDUCE VOMITING; SEEK MEDICAL ATTENTION

DISPOSAL/WASTE TREATMENT:

REFERENCES CONSULTED: [ ] VERSCHUERAN [ ] MERCK INDEX [ ] HAZARDLINE [ ] ACGIH [ ] TOXIC & HAZARDOUS SAFETY MANUAL [ ] CHRIS [ ] SAX
[ ] NIOSH/OSHA POCKET GUIDE
[ ] OTHER: OHS DATABASE

ecology and environment. inc.

JOB NO ZT2051 HAZARD EVALUATION OF CHEMICALS PREPARATION/UPDATE DATE 5-8-90

CHEMICAL NAME: CADMIUM

CAS NUMBER: 7440-43-9 DOT NAME/ID NO.: RQ:
SYNONYMS: C.I 77180

CHEMICAL AND PHYSICAL PROPERTIES:

CHEMICAL FORMULA: CD MOLECULAR WEIGHT: 112.4 PHYSICAL STATE: CRYSTALS SPG/D 8.642 SOLUBILITY (H20): INSOLUBLE
VAPOR PRESS: FREEZING POINT: 609 F BOILING POINT: 1412 F FLASH POINT: N/A FLAMMABLE LIMITS: N/A
ODOR CHARACTERISTICS: NONE
INCOMPATABILIITIES: STRONG OXIDIZERS, SULFER, SELENIUM, ZINC, AMMONIA

BIOLOGICAL PROPERTIES:

IDLH: 40 MG/M3 TLV-TWA: .05 MG/M3 PEL: .2 MG/M3 ODOR THRESHOLD:
HUMAN (LCLO): TCLO 39MG/M3/20M RAT/MOUSE (LC50): AQUATIC: N/A
CARCINOGEN: ANIMAL-POS TERATOGEN: MUTIGEN: EXP
ROUTE OF EXPOSURE: [X] INHALATION [X] EYE CONTACT [X] SKIN CONTACT [X] INGESTION

HANDLING RECOMMENDATIONS (PERSONAL PROTECTIVE MEASURES):

ANY DETECTABLE AIR CONCENTRATION-USE SCBA, USE CHEMICAL RESISTANT GLOVES & BOOTS

MONITORING RECOMMENDATIONS:

HEALTH HAZARDS: CADMIUM DUST MAY CAUSE IRRITATION OF THE NOSE AND THROAT. IF ENOUGH HAS BEEN INHALED AFTER A DELAY OF SEVERAL HOURS, A PERSON MAY ALSO DEVELOP COUGH, CHEST PAIN, SWEATING, CHILLS, SHORTNESS OF BREATH, AND WEAKNESS. DEATH MAY OCCUR. INGESTION OF CADMIUM

ACUTE SYMPTOMS: IRRITATION OF NOSE & THROAT, 2-HOUR DELAY BEFORE SYMPTOMS OF COUGH, CHEST PAIN, NAUSEA, VOMITING, DIZZINESS, CHILLS, STOMACH DISTRESS, NAUSEA, VOMITING, DIARRHEA, ABOMINAL CRAMPS

CHRONIC SYMPTOMS: LOSS OF SMELL, ULCERATION OF NOSE, SHORTNESS OF BREATH, LIVER DAMAGE, KIDNEY DAMAGE (MOST AFFECTED), MILD ANEMIA, EMPHYSEMA, LINKED TO CANCER & HYPERTENSION

FIRST AID

INHALATION: REMOVE TO FRESH AIR, GIVE ARTIFICAL RESPIRATION IF NEEDED, SEEK MEDICAL ATTENTION

EYE CONTACT: FLUSH/RINSE WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES

SKIN CONTACT: REMOVE CONTAMINATED CLOTHING; WASH WITH SOAP AND WATER

INGESTION: GIVE LARGE QUANTITIES OF WATER; INDUCE VOMITING; SEEK MEDICAL ATTENTION

DISPOSAL/WASTE TREATMENT:

TOXIC CD FUMES

REFERENCES CONSULTED: [ ] VERSCHUERAN [ ] MERCK INDEX [ ] HAZARDLINE [X] ACGIH [ ] TOXIC & HAZARDOUS SAFETY MANUAL [ ] CHRIS [ ] SAX
[X] NIOSH/OSHA POCKET GUIDE
[ ] OTHER: SAX,ALDRICH,RTECS, CASARETT & DOULL'S TOXICOLOGY, NIOSH OCCUPATIONAL HEALTHGUIDES

CHEMICAL NAME: Chromium

CAS NUMBER: 744-47-3 DOT NAME/ID NO.: RQ:
SYNONYMS: Chromium metals and insoluable salts

CHEMICAL AND PHYSICAL PROPERTIES:

CHEMICAL FORMULA: Cr MOLECULAR WEIGHT: 52 PHYSICAL STATE: Solid SPG/D 7.2 SOLUBILITY (H20): insoluable
VAPOR PRESS: Variable FREEZING POINT: 3339 F BOILING POINT: 4842 F FLASH POINT: variable FLAMMABLE LIMITS: 23% LEL
ODOR CHARACTERISTICS: NA
INCOMPATABILIITIES: Strong Oxidizers,

BIOLOGICAL PROPERTIES:

IDLH: 500 mg/m3 TLV-TWA: NA PEL: 1.0mg/m3 ODOR THRESHOLD:
HUMAN (LCLO): RAT/MOUSE (LC50): AQUATIC:
CARCINOGEN: TERATOGEN: MUTIGEN:
ROUTE OF EXPOSURE: [X] INHALATION [X] EYE CONTACT [X] SKIN CONTACT [X] INGESTION

HANDLING RECOMMENDATIONS (PERSONAL PROTECTIVE MEASURES):

Respiratory protection with GMC-H cart. >5mg/m3 use SCBA
Skin protection (gloves and coveralls)

MONITORING RECOMMENDATIONS:

Particulates in air - miniram

HEALTH HAZARDS:

ACUTE SYMPTOMS: contact dermatitis, ulceration of skin and nasal mucosa, irritation of eyes and mucous membrane

CHRONIC SYMPTOMS: Not available

FIRST AID

INHALATION: REMOVE TO FRESH AIR, GIVE ARTIFICAL RESPIRATION IF NEEDED, SEEK MEDICAL ATTENTION

EYE CONTACT: FLUSH/RINSE WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES

SKIN CONTACT: REMOVE CONTAMINATED CLOTHING; WASH WITH SOAP AND WATER

INGESTION: GIVE LARGE QUANTITIES OF WATER; INDUCE VOMITING; SEEK MEDICAL ATTENTION

DISPOSAL/WASTE TREATMENT:

Segregate contaminated material, double bag, dispose of as hazardous material

REFERENCES CONSULTED: [ ] VERSCHUERAN [ ] MERCK INDEX [ ] HAZARDLINE [X] ACGIH [ ] TOXIC & HAZARDOUS SAFETY MANUAL [X] CHRIS [ ] SAX
[X] NIOSH/OSHA POCKET GUIDE
[ ] OTHER: Pattys Industrial Hygiene and Toxicology

ecology and environment. inc.

JOB NO ZT2051 HAZARD EVALUATION OF CHEMICALS PREPARATION/UPDATE DATE 5-22-90

CHEMICAL NAME: ETHYL BENZENE

CAS NUMBER: 100-41-4 DOT NAME/ID NO.: RQ:

SYNONYMS: PHENYLETHANE, ETHYL BENZOL

CHEMICAL AND PHYSICAL PROPERTIES:

CHEMICAL FORMULA: C2H5C6H5 MOLECULAR WEIGHT: 106 PHYSICAL STATE: LIQUID SPG/D 0.867 SOLUBILITY (H20): SLIGHTLY

VAPOR PRESS: 7.1 MM FREEZING POINT: -139 F BOILING POINT: 277 F FLASH POINT: 59 F FLAMMABLE LIMITS: 1.0-6.7%

ODOR CHARACTERISTICS:

INCOMPATABILIITIES: OXIDIZERS, OZONE, OXYGEN

BIOLOGICAL PROPERTIES:

IDLH: TLV-TWA: 100 PPM PEL: 100 PPM ODOR THRESHOLD: 140 PPM

HUMAN (LCLO): 100 PPM RAT/MOUSE (LC50): 400 PPM AQUATIC: 100-10 PPM

CARCINOGEN: NEG TERATOGEN: MUTIGEN: NEG

ROUTE OF EXPOSURE: [X] INHALATION [X] EYE CONTACT [X] SKIN CONTACT [X] INGESTION

HANDLING RECOMMENDATIONS (PERSONAL PROTECTIVE MEASURES):

100 PPM APR W/CHEMICAL CARTRIDGE, 2000 PPM-SCBA, EXCEL-VITON;POOR-BUTYL, NATURAL; VAR-NEOPRENE, NITRILE

MONITORING RECOMMENDATIONS:

HEALTH HAZARDS: DO NOT INDUCE VOMITING MEDICAL ATTENT TO REMOVE BY GASTRIC LAVAGE, MOVE TO FRESH AIR, CPR IF NECESSARY, MEDICAL ATTENT, IRRIGATE IMMED W/WATER, WASH SKIN THROUGHLY W/SOAP & WATER

ACUTE SYMPTOMS: IRRITATION OF SKIN,EYES, NOSE, MUCOUS MEMBRANES, DIZZINESS, CONSTRICTION OF CHEST, LACRIMATION, NAUSEA, HEADACHE, VOMITING, CNS DEPRESSION

CHRONIC SYMPTOMS: SKIN CONTACT MAY CAUSE ERYTHEMA & SKIN INFLAMMATION, NO OTHER DATA FOR CHRONIC EFFECTS

FIRST AID

INHALATION: REMOVE TO FRESH AIR, GIVE AMYL NITRITE PEARLS; GIVE ARTIFICAL RESPIRATION IF NEEDED, SEEK MEDICAL ATTENTION

EYE CONTACT: FLUSH/RINSE WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES

SKIN CONTACT: REMOVE CONTAMINATED CLOTHING; WASH WITH SOAP AND WATER

INGESTION: DO NOT INDUCE VOMITING

DISPOSAL/WASTE TREATMENT:

REFERENCES CONSULTED: [ ] VERSCHUERAN [ ] MERCK INDEX [ ] HAZARDLINE [X] ACGIH [ ] TOXIC & HAZARDOUS SAFETY MANUAL [X] CHRIS [X] SAX [X] NIOSH/OSHA POCKET GUIDE

[ ] OTHER: ALDRICH

ecology and environment. inc.

JOB NO ZT2051 HAZARD EVALUATION OF CHEMICALS PREPARATION/UPDATE DATE 5-23-90

CHEMICAL NAME: NICKEL

CAS NUMBER: 7440-02-0 DOT NAME/ID NO.: RQ:

SYNONYMS: RANEY ALLOY, NICKEL PARTICLES

CHEMICAL AND PHYSICAL PROPERTIES:

CHEMICAL FORMULA: NI MOLECULAR WEIGHT: 58.7 PHYSICAL STATE: POWDER SPG/D N/A SOLUBILITY (H20): INSOLUBLE

VAPOR PRESS: N/A FREEZING POINT: 2651 F BOILING POINT: 4946 F FLASH POINT: N/A FLAMMABLE LIMITS: N/A

ODOR CHARACTERISTICS:

INCOMPATABILIITIES: STRONG ACIDS, SULFUR, WOOD, POTASSIUM PERCHLORATE, POWDER FORM IS EXPLOSIVE

BIOLOGICAL PROPERTIES:

IDLH: TLV-TWA: 1 MG/M3 PEL: 1 MG/M3 ODOR THRESHOLD: NONE

HUMAN (LCLO): RAT/MOUSE (LC50): AQUATIC:

CARCINOGEN: HUMAN-SUS TERATOGEN: MUTIGEN: EXPER

ROUTE OF EXPOSURE: [X] INHALATION [X] EYE CONTACT [X] SKIN CONTACT [X] INGESTION

HANDLING RECOMMENDATIONS (PERSONAL PROTECTIVE MEASURES):

ANY DETECTABLE LIMIT USE SCBA, PREVENT SKIN EXPOSURE OR PORLONGED CONTACT

MONITORING RECOMMENDATIONS:

HEALTH HAZARDS:

ACUTE SYMPTOMS: IRRITATION OF SKIN, EYES, MUCOUS MEMBRANES OF UPPER RESPIRATORY TRACT, NAUSEA, VOMITING, GIDDINESS, HEADACHE

CHRONIC SYMPTOMS: DERMATITIS RESULTING FROM SKIN SENSITIZATION, CANCER OF THE LUNG & NASAL PASSAGES IN NICKEL REFINING EMPLOYEES

FIRST AID

INHALATION: REMOVE TO FRESH AIR, GIVE ARTIFICAL RESPIRATION IF NEEDED, SEEK MEDICAL ATTENTION

EYE CONTACT: FLUSH/RINSE WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES

SKIN CONTACT: REMOVE CONTAMINATED CLOTHING; WASH WITH SOAP AND WATER

INGESTION: DO NO INDUCE VOMITING; SEEK MEDICAL ATTENTION TO REMOVE BY GASTRIC LAVAGE

DISPOSAL/WASTE TREATMENT:

REFERENCES CONSULTED: [ ] VERSCHUERAN [ ] MERCK INDEX [X] HAZARDLINE [X] ACGIH [ ] TOXIC & HAZARDOUS SAFETY MANUAL [ ] CHRIS [X] SAX
[X] NIOSH/OSHA POCKET GUIDE
[ ] OTHER: ALDRICH

ecology and environment, inc.

JOB NO ZT2051 HAZARD EVALUATION OF CHEMICALS PREPARATION/UPDATE DATE 5-29-90

CHEMICAL NAME: XYLENE, ALL ISOMERS

CAS NUMBER: 1330-20-7 DOT NAME/ID NO.: FLAMMABLE RQ:
SYNONYMS: DIMETHYLBENZENE, XYLOL

CHEMICAL AND PHYSICAL PROPERTIES:

CHEMICAL FORMULA: C6H4(CH3)2 MOLECULAR WEIGHT: 106.20 PHYSICAL STATE: LIQUID SPG/D 086 SOLUBILITY (H20): INSOLUBLE
VAPOR PRESS: 9 MM FREEZING POINT: BOILING POINT: FLASH POINT: 31 F FLAMMABLE LIMITS:
ODOR CHARACTERISTICS: AROMATIC ODOR, SWEET
INCOMPATABILIITIES: STRONG OXIDIZERS

BIOLOGICAL PROPERTIES:

IDLH: 1000 PPM TLV-TWA: 100 PPM PEL: 100 PPM ODOR THRESHOLD: 20 PPM
HUMAN (LCLO): RAT/MOUSE (LC50): AQUATIC:
CARCINOGEN: TERATOGEN: MUTIGEN: EXPER
ROUTE OF EXPOSURE: [X] INHALATION [X] EYE CONTACT [X] SKIN CONTACT [X] INGESTION

HANDLING RECOMMENDATIONS (PERSONAL PROTECTIVE MEASURES):

APR DUSTY/WINDY CONDIT OR KNOWN HIGH CONCENT OR 1 BUT 5PPM SCBA, COVERALL PE TYVEK, GLOVES PVA, VITON PVA DEGRADES IN WATER

MONITORING RECOMMENDATIONS:

HEALTH HAZARDS:

ACUTE SYMPTOMS: VAPOR CAUSE DIZZINESS, HEADACHE, COUGH, PULMONARY DISTRESS/EDEMA, NAUSEA/VOMITING, ABDOMINAL CRAMPS, NARCOTIC IN HIGH CONCENT, MILD SKIN IRRITANT

CHRONIC SYMPTOMS: POSSIBLE LIVER AND/OR KIDNEY DAMAGE, PULMONARY CONGESTION, INGESTION MAY BE FATAL

FIRST AID

INHALATION: REMOVE TO FRESH AIR, GIVE ARTIFICAL RESPIRATION IF NEEDED, SEEK MEDICAL ATTENTION

EYE CONTACT: FLUSH/RINSE WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES

SKIN CONTACT: REMOVE CONTAMINATED CLOTHING; WASH WITH SOAP AND WATER

INGESTION: DO NOT INDUCE VOMITING; SEEK MEDICAL ATTENTION

DISPOSAL/WASTE TREATMENT:

REFERENCES CONSULTED: [ ] VERSCHUERAN [X] MERCK INDEX [ ] HAZARDLINE [X] ACGIH [ ] TOXIC & HAZARDOUS SAFETY MANUAL [X] CHRIS [ ] SAX
[X] NIOSH/OSHA POCKET GUIDE
[ ] OTHER: RTECS, NIOSH GUIDES, SIGMA-ALDRICH

ecology and environment. inc.

JOB NO ZT2051 HAZARD EVALUATION OF CHEMICALS PREPARATION/UPDATE DATE 6-09-93

CHEMICAL NAME: ZINC

CAS NUMBER: DOT NAME/ID NO.: RQ:

SYNONYMS: BLUE POWDER, CI 77945 JASAD

CHEMICAL AND PHYSICAL PROPERTIES:

CHEMICAL FORMULA: ZN MOLECULAR WEIGHT: 6537 PHYSICAL STATE: SOLID SPG/D 714 SOLUBILITY (H20): INSOLUBLE

VAPOR PRESS: FREEZING POINT: 787 F BOILING POINT: 1655 F FLASH POINT: NON FLAM FLAMMABLE LIMITS:

ODOR CHARACTERISTICS:

INCOMPATABILIITIES: ACIDS, SODIUM PEROXIDE, CHLORINE, WATER SULFER

BIOLOGICAL PROPERTIES:

IDLH: TLV-TWA: 10mg/m3 PEL: 10mg/m3 ODOR THRESHOLD:

HUMAN (LCLO): RAT/MOUSE (LC50): AQUATIC:

CARCINOGEN: TERATOGEN: MUTIGEN:

ROUTE OF EXPOSURE: [X] INHALATION [X] EYE CONTACT [X] SKIN CONTACT [X] INGESTION

HANDLING RECOMMENDATIONS (PERSONAL PROTECTIVE MEASURES):

PREVENT PROLONGED SKIN CONTACT WEAR IMPERVIOUS CLOTHING, GLOVES AND FACESHIELD

MONITORING RECOMMENDATIONS:

HEALTH HAZARDS:

ACUTE SYMPTOMS: SKIN IRRATATION, COUGHING WEAKNESS, MUSCULAR ACHE, FEVER, NAUSEA VOMITING

CHRONIC SYMPTOMS: NONE SPECIFIED

FIRST AID

INHALATION:

EYE CONTACT: FLUSH/RINSE WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES; SEEK MEDICAL ATTENTION

SKIN CONTACT:

INGESTION:

DISPOSAL/WASTE TREATMENT:

PLACE CONTAMINATED CLOTHING IN CLOSED CONTAINERS FOR STORAGE UNTIL LAUNDERED OR DISCARD

REFERENCES CONSULTED: [ ] VERSCHUERAN [ ] MERCK INDEX [ ] HAZARDLINE [X] ACGIH [ ] TOXIC & HAZARDOUS SAFETY MANUAL [X] CHRIS [ ] SAX
[X] NIOSH/OSHA POCKET GUIDE
[ ] OTHER: OHS, Pattys Industrial Hygiene and Toxicology

DRUM HANDLING/OPENING SOP
29 CFR 1910.120 PARAGRAPH J

1) HANDLING:
   A) All drums are to be inspected for integrity before moving or opening.

   B) All inaccessible drums will be moved at a later time for better access if possible.

   C) All unlabeled/unmarked drums/containers are to be considered hazardous and handled accordingly.

   D) DO NOT climb on or stand on drums for any reason.

   E) DO NOT move or attempt to open bulging drums.

   F) Avoid suspicious or unusual containers.

2) OPENING:
   A) Employees/workers not involved in drum opening will keep a safe distance from drums/containers being opened.

   B) If workers are to work near to drums/containers being opened, shielding must be provided that does not interfere with the work operation and must be placed between the workers and the drums/containers being opened. (~~Visqueen Tarp~~)

   C) When opening drums, wear level B protection, splash apron, face shield and all other appropriate PPE.

   D) Visqueen shielding will be placed between worker and drum when opening in such a manner as to prevent contamination to the worker.

   E) Use a brass bung wrench when opening a bung top drum/container; bungs should be turned slowly to release any pressure in the drum. Allow pressure to equalize with the atmosphere.

   F) Suspected shock sensitive drums/containers and/or radioactive waste/chemical drums/containers should be left alone. Contact the regional safety officer.

fire extinguisher must be present during drum opening

PAN: EIL0827 FAA TDD#: TDS-9502-010 EMP#: 3050

JOB: Sanger Drums DATE OUT: 02/20/95 DATE IN: _____

	AUGER, SOIL, HANDHELD	658240
	BINOCULARS	639520
	BLADDER PUMP	720076
	CAMCORDER	903683
	CAMERA, 35 MM, OLYMPUS	639550
✓	CAMERA, MINOLTA	697278
	COMPUTER, COMPAQ	639829
	COMPUTER PRINTER, EPSON	658680
✓	COMPUTER, NORTHGATE	903536
✓	COMPUTER PRINTER, LASERJET	903538
	CONDUCTIVITY TEMP pH TEST	724104
	CONTROLLER, AUTOMATIC	720077
	DESORBER, PROGRAM THERMAL	638637
	DOUBLE DIAGHRAM PUMP	903675
	DRAEGER TUBE DETECTER KIT	657968
	DRUM REPAIR KIT	686474
✓	ENSYS KIT & ACCESS.	647792
	FLOW METER, PORTABLE	658157
✓	GENERATOR, PORTABLE	686147
	GILLIAN AIR SAMPLING KIT	658155
	HEAD SET #1 W/THROAT MIC	668220
	HEAD SET #2 W/THROAT MIC	668219
	HEAD SET #1 VOX UNIT	668265
	HEAD SET #2 VOX UNIT	668266
	HNU, METER & ACCES.	638639
	HNU, MICROTIP	903537
	MEASURING WHEEL	898046
	METER #1, COMB GAS/O2 EXPO	611197
✓	METER #2, COMB GAS/O2 EXPO	903539
	MINIRAM MONITOR #1	733003
✓	MINIRAM MONITOR #2	903679
✓	MOBILE PHONE	733429
	MONITOR, CL2 W/CHARGER	898022
	MONITOR, HCL W/CHARGER	898021
	MONITOX, H2S, GENERATOR	686409
	MONITOX, H2S, MONITOR	686403
	MONITOX, HCN, GENERATOR	686405
	MONITOX, HCN, MONITOR	668142
	MONITOX PLUS, HCN, MONITOR	903678
	OVA METER, GC UNIT #1	638634
✓	OVA METER, GC UNIT #2	660114
	OVA DILUTOR KIT	638638
	OVA, RECORDER, STRIP CHART	638635
	OVA, ISOTHERMAL PACK	638636
	PETERSON GRAB DREDGE	697288

	PITCHER PUMP	697275
	PIPE PLUGGER KIT	686473
	RESPIRATOR,5 MIN ESCAPE	197270
	RESPIRATOR,5 MIN ESCAPE	610689
	SCBA, CYLINDER	197614
	SCBA, CYLINDER	197910
	SCBA, CYLINDER	639666
	SCBA, CYLINDER	685130
	SCBA, CYLINDER	685490
	SCBA, CYLINDER	896527
	SCBA, CYLINDER	896528
	SCBA, CYLINDER	896529
	SCBA, CYLINDER	896530
	SCBA, RESPIRATOR (SPARE)	185600
✓	SCBA, RESPIRATOR (SAMMY)	313651
	SCBA, RESPIRATOR (DEBBIE)	313654
	SCBA, RESPIRATOR (TOM)	639665
	SCBA, RESPIRATOR (DAVE)	685479
	SOIL/GAS RECOVERY KIT	697287
	SPOT LIGHT, PORTABLE	685845
	SPOT LIGHT, PORTABLE	685846
	SUBMERSIBLE PUMP	686520
✓	VEHICLE BLAZER	638480
	VEHICLE SURBURBAN	313836
	VEHICLE VAN	639410
	VICTOREEN RAD METER #1	639311
	VICTOREEN PROBE ALPHA-BETA	639312
	VICTOREEN PANCAKE PROBE	639313
✓	VICTOREEN RAD METER #2	658841
✓	VICTOREEN PROBE ALPHA-BETA	658845
✓	VICTOREEN PANCAKE PROBE	658849
	WALKIE TALKIE	668371
	WALKIE TALKIE	668372
	WALKIE TALKIE BATTERY CHGR	668312
	WALKIE TALKIE BATTERY CHGR	668313
	WATER LEVEL INDICATOR	697282
	WEATHER STATION UNIT #1	
	OTHER	
	H_2 Cylinder (2 ft^3)	

QUANTITY OUT	QUANTITY IN	ITEM
		Sample Jars (Continued)
		SJ-(Amber, 4 Liter; gls)
		SJ-(VOA;gls;40 mil)
		SJ-(VOC;4oz,gls,blk/wht lid)
		SJ-(Short;8oz;gls;blue lid)
[illegible]		SJ-(Tall; 8 oz; gls)
		SJ-(Tall; 16 oz; gls)
		SJ-(Tall; 32 oz; gls)
		SJ-(Plastic; 500 mls)
		Saranex (XL)
		Saranex (XXL)
		Tape, Duct (2" x 60 yds)
		Tape, Fiberglass
		Tape, Strapping (3/4"x 60 yds)
		Tarp
		Thieves (31107-02)
		Thieves (885303)
		Thieves (234130)
		Tongue Depressors
		Tray (8"x8' Aluminum)
		Tray (12"x12" Plastic)
		Trowels (Asst. styles/sizes)
		Tyvek Polycoated - Wht (L)
		Tyvek Polycoated - Wht (XL)
		Tyvek Polycoated - Yel (L)
		Tyvek Polycoated - Yel (XL)
		Tyvek Polycoated - Yel (XXL)
		VRW Lead Acetate Test Strips
		VRW Polyethylene Trans. Pipets
		VRW Polypropylen Grad Cylinder
		VRW Potassium Iodine Strips
		VRW Pyrex Test Tubes
		Vermiculite
1		Wash Tub (Decon)
		Whatman Filters (size 9cm)
		Whatman Filters (size 11cm)
		Whatman Filters (size 12cm)
		Whatman Filters (size 18.5cm)
		Wrench, Bung

QUANTITY OUT	QUANTITY IN	ITEM
		OTHER:

ecology and environment. inc.

JOB NO ZT2051 HAZARD EVALUATION OF CHEMICALS PREPARATION/UPDATE DATE 5-23-90

CHEMICAL NAME: POLYCHLORINATED BIPHENYL

CAS NUMBER: 53469-21-9 DOT NAME/ID NO.: RQ:

SYNONYMS: AROCHLOR 1242/42% CHLORINE, CHLORODIPHENYL

CHEMICAL AND PHYSICAL PROPERTIES:

CHEMICAL FORMULA: C12H7C13 MOLECULAR WEIGHT: 258 PHYSICAL STATE: DARK LIQUID SPG/D 1.3 SOLUBILITY (H20): INSOLUBLE

VAPOR PRESS: 001 MM FREEZING POINT: -2 F BOILING POINT: 617-691 F FLASH POINT: 349 F FLAMMABLE LIMITS: UNKNOWN

ODOR CHARACTERISTICS:

INCOMPATABILIITIES: STRONG OXIDIZERS

BIOLOGICAL PROPERTIES:

IDLH: TLV-TWA: 1 MG/M3 PEL: 1 MG/M3 ODOR THRESHOLD:

HUMAN (LCLO): 10 MG/M3 RAT/MOUSE (LC50): AQUATIC: 278 PPM

CARCINOGEN: SUS-HUM TERATOGEN: MUTIGEN: ANIM-POS

ROUTE OF EXPOSURE: [X] INHALATION [X] EYE CONTACT [X] SKIN CONTACT [X] INGESTION

HANDLING RECOMMENDATIONS (PERSONAL PROTECTIVE MEASURES):

ANY DETECTABLE LIMIT - SCBA, EXCEL-VITON;GOOD-BUTYL, VINYL, NITRILE; POOR-NEOPRENE, SAFETY GOGGLES, CLOTHING TO AVOID CONTACT

MONITORING RECOMMENDATIONS:

HEALTH HAZARDS:

ACUTE SYMPTOMS: IRRITATION OF EYES, NOSE, THROAT, CAN CAUSE VOMITING, EDEMA, ANOREXIA, NAUSEA, ABDOMINAL PAIN, FATIGUE

CHRONIC SYMPTOMS: CHLORACNE FROM PROLONGED SKIN CONTACT, ACUTE & CHRONIC EXPOSURE MAY CAUSE LIVER DAMAGE OR CANCER

FIRST AID

INHALATION: REMOVE TO FRESH AIR, GARGLE WITH WATER AND USE SEDATIVE COUGH MIXTURE

EYE CONTACT: FLUSH/RINSE WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES

SKIN CONTACT: REMOVE CONTAMINATED CLOTHING; WASH WITH SOAP AND WATER

INGESTION: GIVE LARGE QUANTITIES OF SALT WATER; INDUCE VOMITING; SEEK MEDICAL ATTENTION

DISPOSAL/WASTE TREATMENT:

REFERENCES CONSULTED: [ ] VERSCHUERAN [ ] MERCK INDEX [ ] HAZARDLINE [X] ACGIH [ ] TOXIC & HAZARDOUS SAFETY MANUAL [X] CHRIS [X] SAX
[X] NIOSH/OSHA POCKET GUIDE
[ ] OTHER: RTECS

Photodocumentation Log

Camera :

Roll #:

Site:

Date	Photographer	Frame #	Time	Dir.	Description

Photodocumentation Log

Camera :

Roll #:

Site:

Date	Photographer	Frame #	Time	Dir.	Description

Photodocumentation Log

Camera :

Site:

Roll #:

Date	Photographer	Frame #	Time	Dir.	Description

Photodocumentation Log

Camera :

Roll #:

Site:

Date	Photographer	Frame #	Time	Dir.	Description

Photodocumentation Log

Camera :

Site:

Roll #:

Date	Photographer	Frame #	Time	Dir.	Description